



**Stranger Creek, in Leavenworth, &
Atchison counties of Kansas
Cooperating Technical Partner
Mapping Activity Statement**

Agreement # 3 - Hydrologic and Hydraulic Analyses and Floodplain Mapping

In accordance with the Cooperating Technical Partner (CTP) Memorandum of Agreement dated September 1, 1999, between the Kansas Division of Water Resources and the Federal Emergency Management Agency (FEMA), Mapping Activity Statement # 3 is as follows:

- 1. Objective and Scope:** The objective of this Mapping Activity is to develop detailed hydrologic and hydraulic analyses and floodplain and floodway mapping in Stranger Creek. Hydrologic analyses will be completed for approximately 534 square miles of drainage area, and hydraulic analyses and floodplain mapping will be completed for approximately 59 linear miles of flooding, including the following flooding sources: Stranger Creeks & tributaries.

Period of Performance: The period of performance will be in accordance with Agreement Article II of the Cooperative Agreement.

- 2. Funding/Cost-Sharing:** Federal funds for this activity will be provided by FEMA through a Cooperative Agreement.
- 3. Standards:** The standards and documents are relevant to this Mapping Activity are contained in the attached Statement of Work.
- 4. Products:** Kansas Division of Water Resources will make available the items outlined in the attached Statement of Work.
- 5. Schedule and Milestones:**

Products identified in the attached Statement of Work will be delivered as identified in the scheduling worksheet.

Final products will be made available in accordance with the Period of Performance described in Section 2 of this Mapping Activity Statement.

- 6. Certification:** The following certifications apply to this Mapping Activity (as appropriate):
 - Hydrologic and/or hydraulic analyses and data will be certified by a registered Professional Engineer or Licensed Land Surveyor in accordance with 44 CFR 65.6(f).
 - Topographic information will be certified by a registered Professional Engineer or Licensed Land Surveyor in accordance with 44 CFR 65.5(c).
 - For areas depicted as Special Flood Hazard Areas on the effective FIRM that have been altered by the placement of earthen fill, the requirements of 44 CFR 65.5(a) apply.

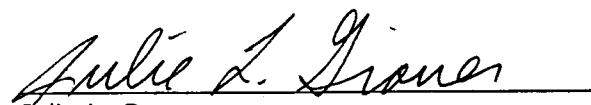
January 9, 2002

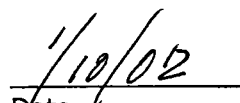
Agreement # 3 – Hydrologic and Hydraulic Analyses and Floodplain Mapping
(Template Version 2.0-R7, 12/7/00)

- Any levee systems to be accredited as discussed in Section 4 of this Mapping Activity Statement will be certified in accordance with 44 CFR 65.10(e).

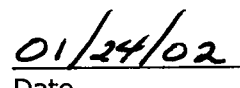
- 7. Technical Assistance and Resources:** Kansas Division of Water Resources may obtain copies of FEMA-issued Letters of Map Change (LOMCs), archived engineering back-up data, and data collected as part of the Mapping Needs Assessment Process from FEMA's Mapping Coordination Contractor (MCC). The MCC may be contacted at 1-877 FEMA MAP (1-877-336-2627). General technical and programmatic information, such as FEMA 265, the Quick-2 computer program, and the MT-2 forms, can be downloaded from FEMA's Flood Hazard Mapping Web site (www.fema.gov/mit/tsd/). Specific technical and programmatic support may be provided through FEMA's MCC; such assistance should be requested through the FEMA MCC Project Officer specified in Section 12 of this Mapping Activity Statement.
- 8. Contractors:** The Corps of Engineers and Dames & Moore completed hydrologic analysis in November 1999. Kucera International Inc. completed aerial mapping in August 2001. The hydraulic analyses contractor has not yet been identified. Procurement of subcontractors using Federal funds provided as part of this Mapping Activity will comply with the requirements of 44 CFR 13.36.
- 9. Quality Assurance/Quality Control (QA/QC) Procedures:** The Quality Assurance/Quality procedures for this activity are identified in the attached Statement of Work.
- 10. Reporting:** Reporting requirements will be in accordance with Agreement Articles V & VI of the Cooperative Agreement.
- 11. Points of Contact:** The FEMA Regional Project Officer is Bob Franke, (816) 283-7073, and the CTP Project Manager is Julie L. Grauer or subsequent personnel of comparable experience who are appointed to fulfill these responsibilities. If it is necessary, the assistance of FEMA's MCC should be requested through the FEMA MCC Project Officer, Bill Blanton, (202) 646-3151.

Each party has caused this Mapping Activity Statement to be executed by its duly authorized representative.


Julie L. Grauer,
Floodplain Program Supervisor
Kansas Division of Water Resources


Date


Robert G. Bissell, Director, Mitigation Division
Federal Emergency Management Agency


Date

STATEMENT OF WORK

KANSAS DEPARTMENT OF AGRICULTURE

STRANGER CREEK (LEAVENWORTH COUNTY)

{Insert Case Number}

January 9, 2002

Statement of Work

Introduction

The purpose of this mapping project is to develop updated Flood Insurance Rate Maps (FIRMs) and Flood Insurance Study (FIS) for Leavenworth County, Easton, Linwood. The FIS and FIRMs will be produced in county-wide digital FIRM (DFIRM) format.

Additionally, this project will include developing new and/or updated flood data, as summarized in the following table:

Flooding Source	Reach Limits	Hydrology	Hydraulics	Floodplain Mapping	Redelin- eation of SFHAs Using Effective Profiles	Refine/ Establish Zone As
Stranger Creek	From the confluence with the Kansas River to the Leavenworth / Atchison County border	X	X	X	N/A	N/A

This project will be completed by the Kansas Department of Agriculture. The tasks, and who will complete them, are described in the Scope of Work below.

Scope of Work

The following sections describe the specific tasks associated with this mapping project. Each task description identifies the responsible entity, the applicable standards, and resultant deliverables.

Statement of Work

Tasks	KS Dept of Agriculture	Contracted task	MCC
Task 1 – Field Surveys and Reconnaissance	X	X	
Task 2 – Topographic Data Development	X	X	
Task 3 – Independent QA/QC of Topographic Data	X		
Task 4 –Hydrology	X	X	
Task 5–Independent QA/QC of Hydrology	X		
Task 6 – Hydraulics	X	X	
Task 7 – Independent QA/QC of Hydraulics			X
Task 8 – Floodplain Mapping (Revised Areas)	X	X	
Task 9 – Independent QA/QC of Floodplain Mapping			X
Task 10 – Base Map Acquisition	X		
Task 11 – DFIRM Production (Non-Revised Areas)			X
Task 12 – Merge Effective and Revised Information			X
Task 13 – Issue Preliminary FIS and FIRM			X
Task 14 – Post-Preliminary Processing			X
Task 15 – Reporting	X	X	X

Task 1 - Field Surveys and Reconnaissance

Responsible Entity: Kansas Department of Agriculture

Scope: To supplement any field reconnaissance conducted during the scoping phase of this project the Kansas Department of Agriculture shall conduct a detailed field reconnaissance of the specific study area to determine conditions along the floodplain(s), types and numbers of hydraulic and/or flood control structures, apparent maintenance or lack thereof of existing hydraulic structures, locations of cross sections to be surveyed, and other parameters needed for the hydrologic and hydraulic analyses.

In addition to the initial field reconnaissance, this task includes conducting field surveys, including obtaining channel and floodplain cross-sections, identifying or establishing elevation reference marks (ERMs), and obtaining the physical dimensions of hydraulic and flood control structures. The Kansas Department of Agriculture is responsible for coordinating with other team members collecting topographic data under Task 2.

Standards: All work conducted under this task shall conform to the standards specified for this task in the "Applicable Standards" section of this SOW.

Deliverables: In accordance with the Technical Support Data Notebook (TSDN) format described in Task 15, the Kansas Department of Agriculture shall make the following products available to the FEMA Lead:

- A report summarizing the findings of the field reconnaissance.
- Maps and drawings that provide the detailed survey results.
- Survey notebook containing cross sections and structural data.

Task 2 - Topographic Data Development

Responsible Entity: Kansas Department of Agriculture (contracted task)

Scope: To supplement the field surveys conducted under Task 1, additional topographic data of the overbank areas of flooding sources will be obtained to delineate floodplain boundaries. Specifically, new topographic data will be generated for Stranger Creek using aerial photogrammetric methods. The Kansas Department of Agriculture is responsible for coordinating with other team members conducting field surveys under Task 1.

This task also consists of developing topographic maps and/or Digital Elevation Models (DEMs) for the subject flooding sources using the data collected in Task 1 and 2. In addition, the Kansas Department of Agriculture will be responsible for addressing all concerns or questions regarding this Task raised during the QA/QC review (Task 3).

Standards: All work conducted under this task shall conform to the standards specified for this task in the "Applicable Standards" section of this SOW.

Deliverables: Upon completion of topographic data collection and processing for Stranger Creek, this data will be submitted to the Kansas Department of Agriculture for independent review under Task 3. Data for the remaining flooding sources will be submitted for QA/QC review at the completion of this task.

In accordance with the Technical Support Data Notebook (TSDN) format described in Task 15, the Kansas Department of Agriculture shall make the following products available to the FEMA Lead.

- Hardcopy topographic maps.
- Completed Form No. 5 of *Revisions to National Flood Insurance Program Maps, Application/Certification Forms and Instructions* (MT-2).
- Report summarizing methodology and results.
- Triangular Irregular Network (TIN) data on CD-ROM.
- Checkpoint analyses to assess the accuracy of TIN data including Root Mean Square Error (RMSE) calculations to support vertical accuracy.
- Identification of remote sensing data voids and methods used to supplement data voids.
- NGS data sheets for Network Control Points (NCP) used to control remote sensing and ground surveys.

Task 3 - Independent QA/QC of Topographic Data

Responsible Entity: Kansas Department of Agriculture

Scope: The Kansas Department of Agriculture shall review the mapping data generated by the Kansas Department of Agriculture under Task 2 of this Statement of Work to ensure that this information is consistent with FEMA standards and standard engineering practice and are sufficient to revise the FIRM.

Standards: All work conducted under this task shall conform to the standards specified for this task in the "Applicable Standards" section of this SOW.

Deliverables: In accordance with the Technical Support Data Notebook (TSDN) format described in Task 15, the Kansas Department of Agriculture shall make the following products available to the FEMA Lead.

- A Summary Report that describes the findings of the QA/QC review.
- Recommendations to resolve any problems that arise as a result of the QA/QC review.

Task 4 - Hydrology

Responsible Entity: Kansas Department of Agriculture (USACE – Kansas City District)

Scope: Hydrologic analyses will be completed for approximately 534 square miles of drainage area for the flooding source(s) listed in the Introduction of this Statement of Work. The hydrologic methods used for this analysis will be based on rainfall-runoff modeling and kinematic wave method using the HEC-1 model and regression equations. Peak flood discharges will be calculated for the 10%, 2%, 1% and 0.2% annual chance storms. These flood discharges will be the basis for subsequent hydraulic analyses of the subject flooding sources. In addition, the Kansas Department of Agriculture will be responsible for addressing all concerns or questions regarding this Task raised during the QA/QC review (Task 5).

----- If GIS-based modeling is used, automated data processing and modeling algorithms will be documented and provided to FEMA to ensure they are consistent with the standards outlined above. Digital data sets (such as elevation, basin, or land use data) will be documented and provided to FEMA for approval prior to performing the analyses to ensure they meet minimum requirements. If non-commercial (i.e., custom-developed) software is used for the analysis, then full user documentation, technical algorithm documentation, and the software will be provided to FEMA for review prior to performing the scope of work.

Standards: All work conducted under this task shall conform to the standards specified for this task in the "Applicable Standards" section of this SOW.

Deliverables: Upon completion of hydrologic modeling for Stranger Creek, the results will be submitted to the Kansas Department of Agriculture for independent review under Task 5. The results for the remaining flooding sources will be submitted for QA/QC review at the completion of this task.

In accordance with the Technical Support Data Notebook (TSDN) format described in Task 15, the Kansas Department of Agriculture shall make the following products available to the FEMA Lead.

- Digital copies of all hydrologic modeling (input and output) files for 10%, 2%, 1% and 0.2% annual chance storms.
- "Summary of Discharge" table(s) for each subject flooding source.
- Appropriate Study Contractor application/certification form for hydrology.
- All back-up data used in the analysis.
- For GIS-based modeling, deliverables include all input and output data, intermediate data processing products, and GIS data layers.

Task 5 - Independent QA/QC of Hydrology

Responsible Entity: Kansas Department of Agriculture

Scope: The Kansas Department of Agriculture shall review the technical, scientific, and other information submitted by the Kansas Department of Agriculture under Task 4 of this Statement of Work to ensure that the data and modeling are consistent with FEMA standards and standard engineering practice and are sufficient to revise the FIRM. This work will include, at a minimum, the following:

- Review submittal for technical and regulatory adequacy, required information, application/certification forms, and supporting data and documentation. The technical review will focus on:
 - Use of acceptable models.
 - Use of appropriate methodology(ies) for area of study or restudy.
 - Correctly applied methodology(ies)/model(s), including Quality Control of input parameters.
 - Comparison with gage data and/or regression equations, if appropriate.
 - Comparison with discharges for contiguous reaches or flooding sources.
- Maintain records of all contacts, reviews, recommendations, and actions and make them readily available to FEMA.
- Maintain an archive of all data submitted for hydrologic modeling review.

Standards: All work conducted under this task shall conform to the standards specified for this task in the "Applicable Standards" section of this SOW.

Deliverables: In accordance with the Technical Support Data Notebook (TSDN) format described in Task 15, the Kansas Department of Agriculture shall make the following products available to the FEMA Lead.

- A Summary Report that describes the findings of the QA/QC review.
- Recommendations to resolve any problems that arise as a result of the QA/QC review.

Task 6 - Hydraulics

Responsible Entity: Kansas Department of Agriculture (contracted task)

Scope: Hydraulic analyses will be completed for approximately 59 miles of the flooding sources listed in the Introduction of this Statement of Work. The modeling will include the 10%, 2%, 1% and 0.2% annual chance events based on peak discharges computed under Task 4. The hydraulic methods used for this analysis will include latest version of HEC-RAS or other hydraulic modeling method that is approved by K.D.A. Cross Section and field data collected under Task 1 will be used to prepare the hydraulic analyses. The hydraulic analyses will be used to establish flood elevations and floodways for the subject flooding sources. In addition, the Kansas Department of Agriculture will be responsible for addressing all concerns or questions regarding this Task raised during the QA/QC review (Task 7).

Floodways will be determined in the Easton and Linwood areas.

Automated data processing and modeling algorithms for GIS-based modeling will be documented and provided to FEMA to ensure they are consistent with the standards outlined above. Digital data sets will be documented and provided to FEMA for approval prior to performing the analyses to ensure they meet minimum requirements. If non-commercial (i.e., custom-developed) software is used for the analysis, then full user documentation, technical algorithm documentation, and the software will be provided to FEMA for review prior to performing the scope of work.

Standards: All work conducted under this task shall conform to the standards specified for this task in the "Applicable Standards" section of this SOW.

Deliverables: Upon completion of hydraulic modeling for Stranger Creek, the results will be submitted to the Mapping Coordination Contractor for independent review under Task 7. The results for the remaining flooding sources will be submitted for QA/QC review at the completion of this task.

In accordance with the Technical Support Data Notebook (TSDN) format described in Task 15, the Kansas Department of Agriculture shall make the following products available to the FEMA Lead.

- Digital profiles of the 10%, 2%, 1% and 0.2% annual chance water-surface elevations representing existing conditions.
- Floodway Data Table(s) for each subject flooding source.
- Digital copies of all hydraulic modeling (input and output) files.
- All back-up data used in the analysis.
- For GIS-based modeling, deliverables include all input and output data, intermediate data processing products, GIS data layers, and final products in the format of the DFIRM database structure.

Task 7 - Independent QA/QC of Hydraulics

Responsible Entity: Mapping Coordination Contractor (PBS&J)

Scope: The Mapping Coordination Contractor (PBS&J) shall review the technical, scientific, and other information submitted by the Kansas Department of Agriculture under Task 6 of this Statement of Work to ensure that the data and modeling are consistent with FEMA standards and standard engineering practice and are sufficient to revise the FIRM. This work will include, at a minimum, the following:

- Review submittal for technical and regulatory adequacy, required information, application/certification forms, and supporting data and documentation. The technical review will focus on:
 - Use of acceptable models.
 - Starting water-surface elevations.
 - Cross section geometry.
 - Manning's "n" values and expansion/contraction coefficients.
 - Bridge and culvert modeling.
 - Discharges.
 - Floodway methods.
 - Tie-in to upstream and downstream non-revised profiles.
- When the HEC-2 or HEC-RAS model is used, the reviewer will utilize the CHECK-2 or CHECK-RAS programs to flag potential problems and focus review efforts.
- Maintain records of all contacts, reviews, recommendations, and actions and make them readily available to FEMA.
- Maintain an archive of all data submitted for hydraulic modeling review.

Standards: All work conducted under this task shall conform to the standards specified for this task in the "Applicable Standards" section of this SOW.

Deliverables: In accordance with the Technical Support Data Notebook (TSDN) format described in Task 15, Mapping Coordination Contractor (PBS&J) shall make the following products available to the FEMA Lead.

- A Summary Report that describes the findings of the QA/QC review.
- Recommendations to resolve any problems that arise as a result of the QA/QC review.

Task 8 - Floodplain Mapping (Revised Areas)

Responsible Entity: Kansas Department of Agriculture

Scope: Digital floodplain and floodway boundaries will be delineated for the flooding sources listed in the Introduction of this Statement of Work. The mapping will incorporate all revised hydraulic modeling and newly acquired topographic information. The floodplain boundaries for the 1% and 0.2% recurrence intervals and a floodway will be delineated on a digital work map based on topographic data developed under Task 2 of this SOW, which will be the basis of the revised FIRM. In addition, the Kansas Department of Agriculture will be responsible for addressing all concerns or questions regarding this Task raised during the QA/QC review (Task 9).

Standards: All work conducted under this task shall conform to the standards specified for this task in the "Applicable Standards" section of this SOW.

Deliverables: Upon completion of floodplain mapping for Stranger Creek, the results will be submitted to Mapping Coordination Contractor for independent review under Task 9. The mapping for the remaining flooding sources will be submitted for QA/QC review at the completion of this task.

In accordance with the Technical Support Data Notebook (TSDN) format described in Task 15, the Kansas Department of Agriculture shall make the following products available to the FEMA Lead.

- Digital work maps with the 1% and 0.2% annual chance floodplain and floodway boundaries delineated. These maps should also include cross sections, BFEs, and zone designation labels.
- Any back-up or supplemental information used in the mapping required for the QA/QC review (Task 9).
- Two sets of hardcopy work maps with the 1% and 0.2% annual chance floodplain and floodway boundaries delineated. These maps should also include cross sections, BFEs, and zone designation labels.
- One copy of the work maps should be provided to each community affected by the flooding. Each plot of shall include the following statement "Financial support to prepare this publication was provided by the Federal Emergency Management Agency through a cooperative agreement with the Kansas Department of Agriculture. The information contained in this publication has not been reviewed for technical accuracy, and does not necessarily reflect the view of the Federal Emergency Management Agency."

Task 9 - Independent QA/QC of Floodplain Mapping

Responsible Entity: Mapping Coordination Contractor

Scope: The Mapping Coordination Contractor shall review the floodplain work maps submitted by the Kansas Department of Agriculture under Task 8 of this Statement of Work to ensure that the results of the hydraulic analyses are accurately represented on the work maps. This work will include, at a minimum, the following:

- Cross sections were properly located and oriented on the work map and agree with the Floodway Data Table.
- The Base Flood Elevations (BFEs) shown on the work map are properly located and agree with the results of the hydraulic modeling.
- The floodway widths agree with the widths shown in the Floodway Data Table(s) and the results of the hydraulic modeling.
- The floodplain boundaries agree with the flood elevations shown in the Floodway Data Table(s) and the contour lines and other topographic information shown on the work maps.
- For coastal studies, setup and runup height elevations shown on the work map agree with those shown on the data table(s), and stillwater elevations are shown where coastal and riverine flooding studied in detail join.
- Zone designations are indicated properly.

Standards: All work conducted under this task shall conform to the standards specified for this task in the "Applicable Standards" section of this SOW.

Deliverables: In accordance with the Technical Support Data Notebook (TSDN) format described in Task 15, the Mapping Coordination Contractor shall make the following products available to the FEMA Lead.

- A Summary Report that describes the findings of the QA/QC review noting any deficiencies and providing recommendations to resolve them or agreeing with the mapping results.
- Recommendations to resolve any problems that arise as a result of the QA/QC review.
- An annotated work map with all questions and/or concerns indicated will be provided, if necessary.

Task 10 - Base Map Acquisition

Responsible Entity: Kansas Department of Agriculture

Scope: This task consists of obtaining the Digital Ortho Quad base map for the project, and includes the following activities:

- Obtain raster digital files of the base map.
- Secure necessary permissions from the map source to allow FEMA's use and distribution of hardcopy and digital map products using the digital base map, free of charge.
- Certify that the digital data meets the minimum standards and specifications that FEMA requires for DFIRM production.
- Populate the DFIRM database with the information required by FEMA.

Standards: All work conducted under this task shall conform to the standards specified for this task in the "Applicable Standards" section of this SOW.

Deliverables: In accordance with the Technical Support Data Notebook (TSDN) format described in Task 15, the Kansas Department of Agriculture shall make the following products available to the FEMA Lead.

- Written certification that the digital data meet the minimum standards and specifications.
- Documentation that the digital base map can be used by FEMA.

Task 11 - DFIRM Production (Non-Revised Areas)

Responsible Entity: The Mapping Coordination Contractor (PBS&J)

Scope: For all flooding sources except those specified in the Introduction to the Statement of Work (that will have updated flood data developed under Tasks 1 – 9), the effective FIRMs and Flood Boundary Floodway Maps (FBFMs) will be converted to digital format that conforms with FEMA's Digital FIRM (DFIRM) specifications. The base map acquired under Task 10 will be used for the conversion. The scope of this task covers the digitization of twenty-three (23) FIRM panels and sixteen (16) FBFMs panels. Letters of Map Change (LOMCs) issued since the current effective FIRM for each affected community will also be incorporated. The digital flood theme for the flooding sources specified in the Introduction will not be digitized as part of this Task; rather, the Kansas Department of Agriculture will leave these as "holes" in the digital flood theme that will be filled in as part of Task 12 using digital flood data from Task 8.

Standards: All work conducted under this task shall conform to the standards specified for this task in the "Applicable Standards" section of this SOW.

Deliverables: In accordance with the Technical Support Data Notebook (TSDN) format described in Task 15, the Mapping Coordination Contractor (PBS&J) shall make the following products available to the FEMA Lead.

- DFIRM mapping files in one of the GIS file formats specified in FEMA's Digital Flood Insurance Rate Map (DFIRM) Specifications. These files should be provided on CD-ROM.
- DFIRM database files in one of the database formats specified in FEMA's Digital Flood Insurance Rate Map (DFIRM) Specifications. These files should also be provided on CD-ROM.
- Metadata files describing the DFIRM data should be provided. These files will include the required information and follow the examples shown in FEMA's Digital Flood Insurance Rate Map (DFIRM) Specifications.
- A complete set of plots of the DFIRM panels showing all detail at the scale(s) agreed upon in the "Scope of Project" will be provided.
- A Quality Assurance/Quality Control (QA/QC) report that includes a description and the results of all automated or manual quality assurance steps taken during the preparation of the DFIRMs will be provided.

Task 12 - Merge Effective and Revised Information

Responsible Entity: The Mapping Coordination Contractor (PBS&J)

Scope: Upon completion of the Floodplain Mapping Task (Task 8) for the revised flooding sources and the Digital FIRM Production (Task 11) for non-revised flooding sources, the digital floodplain data will be merged into a single, updated Digital FIRM. This work will include tying in flood profiles, floodplain boundaries and floodways with contiguous communities that were not studied as part of this project. The Mapping Coordination Contractor (PBS&J) will be responsible for coordinating with those conducting Tasks 8 and 11, as necessary, to resolve any potential tie-in issues.

Standards: All work conducted under this task shall conform to the standards specified for this task in the "Applicable Standards" section of this SOW.

Deliverables: In accordance with the Technical Support Data Notebook (TSDN) format described in Task 15, the Mapping Coordination Contractor (PBS&J) shall make the following products available to the FEMA Lead.

- DFIRM mapping files in one of the GIS file formats specified in FEMA's Digital Flood Insurance Rate Map (DFIRM) Specifications. These files should be provided on CD-ROM.
- DFIRM database files in one of the database formats specified in FEMA's Digital Flood Insurance Rate Map (DFIRM) Specifications. These files should also be provided on CD-ROM.
- Metadata files describing the DFIRM data should be provided. These files will include the required information and follow the examples shown in FEMA's Digital Flood Insurance Rate Map (DFIRM) Specifications.
- A complete set of plots of the DFIRM panels showing all detail at the scale(s) agreed upon in the "Scope of Project" will be provided.
- A Quality Assurance/Quality Control (QA/QC) report that includes a description and the results of all automated or manual quality assurance steps taken during the preparation of the DFIRMs will be provided.

Task 13 - Issue Preliminary FIS and FIRM

Responsible Entity: The Mapping Coordination Contractor (PBS&J)

Scope: This task consists of the final preparation, review and distribution of the preliminary FIRM and associated FIS report for community and public review and comment. The activities to be performed include:

- *FIS Report Preparation:* Unless instructed otherwise by FEMA, the revised FIS report will be prepared in the format of the existing FIS report. It will be revised to reflect current conditions, and include updated data tables and flood profiles. At a minimum, it will include the following: text; cover; vicinity map; tables; photographs (if available); profiles; floodway schematic; and, when necessary, transect schematic and transect location map.
- *Quality Assurance/Quality Control:* A final QA/QC review of the preliminary FIRMs and FIS report, including all data tables, flood profiles, and other components of the FIS, as appropriate, and the news release will be conducted. The QA/QC procedures will be consistent with the *Guidelines and Specifications for Flood Map Production Coordination Contractors (Final Draft)* referenced in the "Standards" subsection below.
- *Discrepancy Resolution:* The party conducting this task will be responsible for working with the party(ies) performing the other tasks of this project to resolve discrepancies identified during QA/QC.
- *Distribution of Preliminary FIRM and FIS:* The Preliminary FIS and FIRMs will be distributed to the affected communities, State agencies, and others as appropriate.
- *News Release Preparation:* News release notifications of BFE changes will be prepared and submitted for QA/QC review (discussed below) prior to being published. The news release will summarize newly proposed BFEs, modifications to existing BFEs, and any changes to the community's floodplain management ordinances to be NFIP compliant. Upon completion of a 30-day community comment period and/or final meeting with the community, and upon initiation of the 90-day appeal period, the Mapping Coordination Contractor (PBS&J) will arrange for and verify that the news release is published in prominent newspapers with local circulation within each affected community.

Statement of Work

Standards: All work conducted under this task shall conform to the standards specified for this task in the "Applicable Standards" section of this SOW.

Deliverables: In accordance with the Technical Support Data Notebook (TSDN) format described in Task 15, the Mapping Coordination Contractor (PBS&J) shall make the following products available to the FEMA Lead.

- Sets of printed preliminary DFIRMs and revised FIS reports, including all updated data tables and flood profiles shall be mailed to the CEO of each community, the State NFIP Coordinator, the FEMA Regional Office, and others as directed by the FEMA Lead.
- Preliminary transmittal letter.
- Revised DFIRM mapping files in one of the database formats specified in FEMA's Digital Flood Insurance Rate Map (DFIRM) Specifications. These files should also be provided on CD-ROM.
- Revised DFIRM database files in one of the database formats specified in FEMA's Digital Flood Insurance Rate Map (DFIRM) Specifications. These files should also be provided on CD-ROM.
- Revised metadata files describing the DFIRM data should be provided. These files will include the required information and follow the examples shown in FEMA's Digital Flood Insurance Rate Map (DFIRM) Specifications.
- A Quality Assurance/Quality Control (QA/QC) report that includes a description and the results of all automated or manual quality assurance steps taken during the preparation of the preliminary DFIRMs will be provided.
- Document that the news release(s) was published in accordance with FEMA requirements.

Task 14 - Post-Preliminary Processing

Responsible Entity: The Mapping Coordination Contractor (PBS&J)

Scope: This task consists of finalizing the FIRMs and FIS report after the preliminary FIS and FIRM have been issued for public review and comment. The activities to be performed include:

- *Resolving Appeals and Protests:* Appeals and protests received during the 90-day appeal period will be reviewed and resolved prior to finalizing the FIRMs and FIS report. For each appeal and protest, the following activities will be conducted: initial processing of the submission, technical review of the appeal/protest, preparation of additional data requests, performing revised analyses, and preparing a proposed resolution for FEMA's review. The FEMA MCC (PBS&J) will mail all associated correspondence upon authorization by FEMA.
- *Special Correspondence:* Comments not received within the 90-day appeal period (referred to as "special correspondence") will be reviewed, and responses will be drafted for FEMA's review. The Mapping Coordination Contractor (PBS&J) will also mail the final correspondence upon authorization by FEMA.
- *Revise FIRMs and FIS Report:* If necessary, the party responsible for this task will work with those parties responsible for preparing the DFIRM under Tasks 8, 11, and 12 to prepare a Revised Preliminary FIRMs and FIS report, including all data tables and flood profiles.
- *Letter of Final Determination:* The party responsible for this task will work with FEMA to establish an effective date for the FIRMs and FIS report, and will prepare a draft Letter of Final Determination (LFD) for FEMA's review.
- *GPO Processing:* Final copies of the FIRMs and FIS report will be prepared and provided to FEMA. This will include camera-ready film negatives of the FIRMs and paper copies of the FIS reports and profiles. In addition, the appropriate paperwork will be prepared and included with the FIRMs and FIS report, including the Transmittal Letter to the Community CEO, the Print Processing Worksheet, the Printing Requisition Form, and the Community Map Action Form.
- *Archiving Data:* The engineering back-up data and correspondence will be packaged and transmitted to the Engineering Study Data Package facility.

Statement of Work

Standards: All work conducted under this task shall conform to the standards specified for this task in the "Applicable standards" section of this SOW.

Deliverables: In accordance with the Technical Support Data Notebook (TSDN) format described in Task 15, the Mapping Coordination Contractor (PBS&J) shall make the following products available to the FEMA Lead.

- Draft LFD and associated back-up data and information for FEMA review.
- Draft Special Correspondence and back-up data and information for FEMA review.
- Appeal and Protest resolution letters, and all back-up data and information for FEMA review.
- DFIRM negatives and printed FIS reports, including all updated data tables and flood profiles, will be printed as needed.
- Complete, organized Engineering Study Data Packages.

Statement of Work

Task 15 - Reporting

The Project Team members for this project that have responsibilities for tasks included in this Statement of Work shall comply with the following reporting requirements:

- All supporting documentation for the tasks in this Statement of Work shall be submitted in accordance with the *Guide for Preparing Technical Support Data Notebook*, prepared by FEMA, dated May 1989, Revised January 1990. The following table indicates which sections of the guidance document apply to which Task.

TSDN—Applicable Sections

Section of TSDN Guidance Document	Tasks													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
General Documentation														
Special Problem Reports	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Contract (Telephone Conversation) Reports	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Meeting Minutes/Reports	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
General Correspondence	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Engineering Analyses														
Hydrologic Analyses	✓	✓		✓	✓									
Hydraulic Analyses	✓	✓				✓	✓							
Key to Cross-section Labeling	✓	✓				✓	✓	✓	✓					

TSDN—Applicable Sections

Section of TSDN Guidance Document	Tasks													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Key to Transect Labeling	✓	✓				✓	✓	✓	✓					
Draft FIS Report Text				✓		✓							✓	✓
Mapping Information		✓						✓	✓	✓	✓	✓	✓	✓
Miscellaneous Reference Materials	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

- If any issues arise that could affect the completion of a Task within the proposed scope or budget, the party responsible for that Task must complete a Special Problem Report (SPR) as soon as possible after the issue is identified and submit it to the FEMA Lead. The SPR should describe the issue and propose possible resolutions.
- The Kansas Division of Agriculture will provide quarterly reports as specified in the Cooperative Agreement.

Additionally, The Mapping Coordination Contractor (PBS&J) will be responsible for collecting and maintaining a set of deliverables for all tasks and shall compile a comprehensive TSDN for the entire project.

Applicable Standards

The following table indicates the relevant standards and documentation that apply to each task described under the Scope of Work.

TABLE 1
APPLICABLE STANDARDS

Statement of Work

Applicable Standards Per Assigned Tasks

Applicable Standards	Tasks														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
<i>Flood Insurance Study Guidelines and Specification for Study Contractors</i> (FEMA 37), January 1995, including addendum, "Certification Forms and Instructions for Study Contractors," April 1993	✓	✓	✓	✓	✓	✓	✓	✓							
American Congress on Surveying and Mapping (ACSM) procedures	✓		✓												
Global Positioning System (GPS) Surveys: National Geodetic Survey (NGS-58), "Guidelines for Establishing GPS-Derived Ellipsoid Heights," November 1997	✓	✓	✓												
EM 1000-1-1000, "Photogrammetric Mapping," March 31, 1993	✓	✓	✓												
EM 1110-2-1003, "Hydrographic Surveys," October 31, 1994	✓		✓												
<i>Flood Insurance Study Guidelines and Specifications for Study Contractors</i> (FEMA 37), Appendix 4B, Airborne Light Detection and Ranging Systems		✓	✓												

Statement of Work

Applicable Standards Per Assigned Tasks

Applicable Standards	Tasks														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
<i>Numerical Models Accepted by FEMA for NFIP Usage, December 8, 1999</i>				✓		✓									
<i>Guidelines and Specifications for Flood Map Production Coordination Contractors (Final Draft), February 17, 1999</i>					✓		✓		✓	✓	✓	✓	✓	✓	
<i>Procedures for (Interim) Hydrology Reviews (Draft)</i>					✓	✓									
<i>Base Map Standards for New Digital Flood Insurance Rate Map Product (Draft, February 19, 1999)</i>										✓					
<i>Content Standards for Digital Geospatial Metadata (Federal Geographic Data Committee, 1998)</i>										✓	✓	✓		✓	
<i>Digital Flood Insurance Rate Map (DFIRM) Specification</i>											✓	✓		✓	
<i>Document Control Procedures Manual dated October 1993.</i>													✓	✓	
<i>Guidance for Preparing Technical Support Data Notebook, prepared by FEMA, dated May 1989, Revised January 1990</i>															✓

Project Coordination

Throughout the project, all members of the Project Team will coordinate, as necessary, to ensure the products meet the technical and format specifications required and contain accurate, up-to-date information. Coordination activities will include:

- Meetings and teleconferences with FEMA and other project team members will occur on an ad hoc basis, as required.
- E-mail and letters, as required.

Post-Submission Requirements

Each member of the Project Team is responsible for assisting in the resolution of issues and questions raised prior to the FIRMs being issued as effective.